

AMENDMENTS TO THE CLAIMS:

LISTING OF CLAIMS:

1. (Currently Amended): Non-fragmenting, forward-acting ~~high~~ overpressure relief apparatus comprising:

a rupture disc having a central section provided with ~~a high~~ an overpressure receiving face and a peripheral flange section, said central section of the rupture disc having a bulged portion, said bulged portion of the central section of the disc being of generally asymmetric shape;

said central section of the disc having a line of weakness extending around a part of the central section, said line of weakness having opposed end regions in spaced relationship that define a unitary hinge portion therebetween, each of said end regions having an outermost end,

said line of weakness defining a part of the central section of the disc that ruptures and opens upon application of a forward-acting force of at least predetermined ~~high~~ magnitude to said overpressure receiving face of the central section,

a hold-down member mounted on and engaging the peripheral flange section of the rupture disc on the side thereof opposite the overpressure receiving face of the central section of the disc, said hold-down member having an inner opening in generally circumscribing relationship to the central section of the disc,

said hold-down member being provided with a unitary segment that extends into the inner opening of the hold-down member thereof,

said segment of the hold-down member overlying and engaging the hinge portion of the disc in disposition overlying said end regions of the line of weakness,

said segment having an innermost linear margin extending between opposed end regions of the line of weakness in inwardly spaced relationship from respective outermost ends of the line of weakness,

said segment of the hold-down member undergoing deflection in the direction of a forward-acting overpressure force applied to the central section of the disc to absorb and divert a part of the overpressure force away from the portion of the hinge extending between respective outermost end regions of the line of weakness and thereby contribute to prevention of separation of the central section of the disc from the peripheral portion of the disc.

2. (Original): Apparatus as set forth in claim 1, wherein said segment of the hold-down member has a generally rectilinear outer margin.

3. (Original): Apparatus as set forth in claim 2, wherein said segment of the hold-down member is of generally planar configuration.

4. (Original): Apparatus as set forth in claim 1, wherein said central section of the rupture disc is of generally planar configuration.

5. (Canceled)

6. (Canceled)

7. (Amended): Apparatus as set forth in claim 6 1, wherein the portion of the central section of the rupture disc between engaged by said segment of the hold-down member is of generally flat configuration.

8. (Original): Apparatus as set forth in claim 1, wherein said margin of the hold-down member segment is generally rectilinear and has opposed extremities that ~~overly~~ overlie and extend beyond opposite respective portions of the line of weakness.

9. (Original): Apparatus as set forth in claim 1, wherein a transverse portion of the segment of the hold-down member extending inwardly in a direction away from said margin of the segment is deflected by the hinge portion of the central section of the disc during rupture of the central section of the disc along substantially the full length of the line of weakness, said deflected transverse portion of the segment of the hold-down member absorbing a part of said rupture force applied to the central section of the disc to divert said part of the force away from the part of said hinge portion extending between respective outermost ends of the line of weakness.

10. (Original): Apparatus as set forth in claim 9, wherein said deflected transverse portion of the segment of the hold-down member presents a generally inclined outwardly facing surface engaged by the hinge portion of the disc, which in conjunction with the force absorbed by the deflected transverse portion of the hold-down member segment contributed to prevention of separation of the central section of the disc from the peripheral flange section thereof at the hinge portion of the disc.

11. (Original): Apparatus as set forth in claim 1, said opposed end regions of the line of weakness converging toward one another and located beneath the hold-down member segment.

12. (Original): Apparatus as set forth in claim 1, wherein said line of weakness is defined by a series of elongated, end-to-end, spaced slits extending through the central section of the rupture disc, said slits being separated from one another by individual webs that are unitary with the remainder of the central section of the disc.

13. (Original): Apparatus as set forth in claim 12, wherein each of said slits is of substantially greater length than the width of each web between respective ends of adjacent slits.

14. (Original): Apparatus as set forth in claim 1, wherein the central section of said rupture disc has an outer edge portion that is generally circular, said hold-down member being of generally annular configuration with the inner opening thereof surrounding the circular edge portion of the central section of the disc.

15. (Original): Apparatus as set forth in claim 14, wherein the central section of the disc has a major bulged portion and a unitary minor relatively flat portion, said flat portion of the disc being in engagement with said segment of the hold-down member.

16. (Canceled)

17. (Amended): Apparatus as set forth in claim 23, wherein the part of the bulged portion of the central section of the rupture disc remote from the hinge portion of the disc is of greater three dimensional curvature than the three dimensional curvature of the bulged portion of the

central section of the rupture disc that approaches and merges into the flat portion of the central section of the rupture disc.

18. (Original): Apparatus as set forth in claim 1, wherein the line of weakness in the central section of the disc is configured and sized and the segment of the hold-down member engaging the central section of the disc is oriented with respect to the end regions of the line of weakness such that upon rupture of the central section of the disc along the line of weakness, the hinge portion of the central section of the disc defined by the end regions of the line of weakness bends around the outer margin of the segment of the hold-down member thus precluding separation of said hinge portion and thereby the central section of the disc from the peripheral flange section thereof along an imaginary line between said outermost ends of the end regions of the line of weakness.

19. (Original): Apparatus as set forth in claim 12, wherein is provided a pair of said discs, said discs being positioned with one disc overlying the other disc, there being a layer of material therebetween precluding passage of fluid through the slits until rupture of the webs between the slits of each line weakness of respective discs resulting in rupture of the central section of both of the discs.

20. (Original): Apparatus as set forth in claim 19, wherein each of the discs is of sheet material, the thickness of the sheet material of one of the discs being greater than the thickness of the material of the other disc.

23. (New): Non-fragmenting, forward-acting overpressure relief apparatus comprising:

a rupture disc having a central section provided with a overpressure receiving face and a peripheral flange section,

the central section of the rupture disc having a major bulged portion and a unitary minor relatively flat portion, the central section of the rupture disc having an outer edge portion that is generally semicircular,

said central section of the disc having a line of weakness extending around a part of the central section, said line of weakness having opposed end regions in spaced relationship that define a unitary hinge portion therebetween, each of said end regions having an outermost end,

said line of weakness defining a part of the central section of the disc that ruptures and opens upon application of a forward-acting force of at least predetermined magnitude said overpressure receiving face of the central section,

a generally annular hold-down member mounted on and engaging the peripheral flange section of the rupture disc on the side thereof opposite the overpressure receiving face of the central section of the disc, said hold-down member having an inner opening in generally circumscribing relationship to the semicircular edge portion of the central section of the disc,

said hold-down member being provided with a unitary segment that extends into the inner opening of the hold-down member thereof, said segment of the hold-down member being in engagement with said flat portion of the disc,

said segment of the hold-down member overlying and engaging the hinge portion of the disc in disposition overlying said end regions of the line of weakness,

said segment having an innermost linear margin extending between opposed end regions of the line of weakness in inwardly spaced relationship from respective outermost ends of the line of weakness,

said segment of the hold-down member undergoing deflection in the direction of a forward-acting overpressure force applied to the central section of the disc to absorb and divert a part of the overpressure force away from the portion of the hinge extending between respective outermost end regions of the line of weakness and thereby contribute to prevention of separation of the central section of the disc from the peripheral portion of the disc.